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LETTER TO THE EDITOR

Extracorporeal shock-wave therapy: Can it be used for the management of any calcific tendinopathy?

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Dear Editor,

Calcific tendinopathies (CT) are common clinical conditions that are managed by doctors and physical therapists. The main complaints of patients with CT are pain and decreased function, both of which may affect daily activities. Diagnosis is confirmed by X-ray, magnetic resonance imaging, and ultrasound examination. Although no ideal treatment has emerged, clinicians advocate for conservative rehabilitation approaches, including the use of electrotherapeutic modalities such as extracorporeal shockwave therapy (ESWT). The question that arises is whether ESWT is an effective treatment approach for all tendinopathies with calcification.

The majority of research on ESWT for CT that has been carried out involved calcific shoulder tendinopathy (CST). The most fundamental research on ESWT for CST has been conducted with focused shockwave therapy, but research on radial shockwave therapy, which is relatively new and a promising modality to treat this disorder, has started to be published. One of the mechanisms of the therapeutic effect of ESWT for the treatment of CST is destruction of calcifications [1]. There is a lack of *in vitro* studies to explain how the increasing pressure produced by ESWT causes fragmentation and cavitation effects inside amorphous calcifications, leading to disorganization and disintegration of the deposits [2].

Alternatively, disintegration of calcifications in shoulder tendinopathy after ESWT has been shown in *in vivo* studies [2]. High-energy ESWT under anaesthesia effectively treats (strong and moderate evidence) CST in the short, mid, and long terms [3]. Focus on the calcific deposit is more effective (moderate evidence) than focus on the tuberculum majus [3]. However, further studies are needed to standardize ESWT parameters (energy flex density, number of sessions, and impulses) to be used in rehabilitation protocols [4].

Systematic reviews showed satisfactory evidence for the effectiveness of low-energy ESWT in the treatment of four common tendinopathies, such as chronic insertional and noninsertional Achilles tendinopathy, chronic patellar tendinopathy, and chronic lateral elbow tendinopathy commonly referred to as tennis elbow and/or lateral epicondylitis [5]. It is believed that ESWT is an effective treatment approach for these tendinopathies with calcification using the same, under investigation, parameters for CST. However, there are no studies to support this belief. The question that arises is why there is this lack of evidence. Some possible reasons are as follows: (1) there is no calcification in the above-reported tendinopathies; (2) calcification is not so common in these four tendinopathies as in shoulder tendinopathy; (3) patients receive medical care before the development of calcification; and (4) there is calcification in these four tendinopathies, but X-ray, magnetic resonance imaging,, or ultrasound examinations are not conducted to confirm the development of calcification. If Hypotheses I, II, and III, as stated above, are correct, then the purpose of this entire letter is actually moot—that is, if calcification in these tendons is not a problem, then why there should be any impetus or

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recommendation that ESWT be evaluated as a treatment. However, Hypotheses I, II, and III are not correct because there is calcification in the above four tendinopathies, which is common, and patients usually receive treatment at the chronic stage of the disorder when calcification has developed. Therefore, the lack of studies should be explained by Hypothesis IV.

Finally, the aim of this letter is two-fold, which suggests the following: first, future studies are needed to standardize ESWT parameters in the management of CT, and secondly, well-conducted trials are needed to find out the effectiveness of ESWT in the treatment of CT.

Conflicts of interest

None.

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